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since the author admits with Espinas that the family is in many ways inimical to the formation of wider association. The only advantage is that it develops certain talents that may make easier the development of wider associations. The emotions are said in one place (p. 406) to be forces that increase the effect of the instincts, sexual and parental, and so contribute to the formation of the family. Later (p. 418), in criticism of Sutherland, the emotions are identified with instinct, in harmony with the earlier definition. Among intelligent forces are mentioned invitation, the recognition of kind, communication, made possible by the development of vocal organs and the nervous system, and leadership. The theories that have laid emphasis upon these different forces are briefly reviewed with the conclusion that "all of the writers—McDougall, Petrucci, Adam Smith, Sutherland, Giddings, Kropotkin, Tarde, and Durkheim—have made important contributions to the analysis of social evolution, but it is evident that all of their theories are too unilateral and do not include all of the factors in social evolution."

On the whole the volume provides a useful résumé of a wide range of the literature in English, in general biology, nervous anatomy and physiology, and psychology, that bears upon human behavior. It is of course impossible for any one to be equally familiar with all parts of so wide a field, there must be occasional slips and there would necessarily be difference of opinion as to the emphasis that should be put upon different parts of the field; but in spite of its faults the work should be a convenient work of reference for the student who has not the time or opportunity to read the summaries of fact in the different realms of knowledge from which Professor Parmelee draws his material.

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Prinzipien der Erkenntnislehre. Versuch zu einer Neubegründung des Nominalismus. Von E. v. ASTER. Leipzig, Quelle & Meyer, 1913. —pp. 408. Geh. M. 7.80; Geb. M. 8.60.

The subtitle proclaims this work to be an attempt to ground anew the doctrine of nominalism. The proposal bids us pause, for who is unmindful of the three centuries of 'monkish quarrel' when wrangling schoolmen drew out in fine-spun distinctions every theological impliction of this doctrine, made logic confront itself, asked of psychology impossible questions, framed definitions in general terms where the meaning of general terms was itself the matter in dispute, and drove the whole controversy afield into boundless regions of metaphysical speculation? It is true nevertheless that nominalism triumphed, the authority of the Church was broken, and the vast system of Scholasticism came to an end.

Recently a new nominalism under Monsieur LeRoy has impugned the validity of our science. This has occurred because, as Bertrand Russell has clearly shown, general relations are a special class of universals—neither genera nor abstractions, but a third type the schoolmen overlooked. Now modern science is a system of relations, in the form of general laws and principles. When these are expressed in the language of science, a nominalist may say we get a succession of empty symbols, and science may seem on the point of vanishing. We may indeed respect the nominalist doctrine under this guise as one would respect a test-tube of prolific germs which, if the fragile glass be shattered, might plunge the world again into mental doldrums.

However, the bare conclusion that general terms are empty sounds —*vocis flatus*—and nothing more, is a self-refuting doctrine. One must go on and explain how we come to employ such fictions as if they meant something. And Professor von Aster holds that we can discern the relations of things, and that this knowledge is communicable. General concepts do not exist, but a mental content of a different kind exists and supplies the lack of them. Ordinarily, he believes, language spoken, heard or read, does not stimulate to mental pictures or other representations corresponding to separate general terms. Words awaken, for one thing, "reflexes in consciousness," feelings, which, as it were, supply a running commentary to the thought-process, but feelings do not constitute meaning or sense. It is a definite psychological problem to discover what actually functions in place of general concepts, and this task, being intricate, requires a thorough inductive investigation of the meanings of words.

To define a word by other words does not liberate us from the spell of conceptualism; it leads us either to infinite regression or to an obvious circle. The only procedure open to us is to refer terms back to their ultimate points of reference among the data of sense impressions. The term 'Matterhorn' thus leads to a certain crude fact of experience. We need not seek the actual sense-impression, a memory image will suffice. Such an image is a "natural symbol"; it does not misrepresent, and yet it is not exactly like, the original impression. The author concludes that the difference between memory image and percept is *sui generis*. But, this reference of the word to a memory image is safe and satisfactory. It constitutes the second method of determining the meaning of a word.

Most words, however, in fact all except singular terms such as

Matterhorn, do not acquire their full meaning out of what is barely given in sense-impression. The term 'blue,' for example, evinces a reaching out toward more content than is contained in the one particular color that I see or imagine. Or, again, if I hear a rumbling sound and designate it as the roar of an approaching train, the term used indicates a crude fact in complication with an inference about it. These instances will give some hint of a third way in which meaning can be apprehended. They also will furnish a clue to the manner in which genera and abstractions are conceived, for these concepts are not gained immediately through sense, which can reveal only the individual and the concrete.

It is clear that we do not recall classes and abstractions, since we have never apprehended them through sensuous appearances. It is a knowledge not of them but about them that we possess. This sounds mysterious, but does not science deal with real objects which also outstrip sensuous appearances, transcending the data gained from our senses, just as do the ideal objects that we call genera and abstractions? A tree as real object has volume, has a side we do not see; we say its leaves have definite color, however much their appearance alters under varying conditions of distance and illumination. The real object and the species are both indeed generalizations; the real exists at a definite time, the ideal is thought of as timeless: this is the principal difference.

The mind bridges the chasm between sense-given facts and real objects by its propensity to form judgments. We lean on past memories when we infer that a real tree has a side turned away from us. What we mean by saying that the tree is an *actual* object is that the tree will fulfil certain expectations of ours; that is that these will be realized if we see to it that certain conditions are fulfilled. Likewise in the case of ideal objects, their meaning is expressed in judgments such as apply to any or all real objects of the given class.

The author adjusts this explanation very convincingly to a wide range of notions, to those of colors, sounds, the ego, et cætera. Following Ehrenfels on the matter, he asserts that the mind has an immediate perception also of relations in the form of phenomenal appearances; secondarily, that from these the real relations are to be inferred; and thirdly, that we can reasonably discuss ideal relations, such as those of identity, similarity, unity, manifoldness. The .world of science receives on these grounds an ample justification, and thus his nominalism leads to realistic conclusions.

Applying these considerations to the nature of language, it must be evident that words have almost no clear meaning when apperceived totally apart from all context. Language was made to denote relations, to express judgments, especially those that take the form of expectations. Suppose, while walking in a wood, I turn carelessly to inspect a dark streak by the side of the path, and my companion says, 'that is a viper.' It comes as the signal for a definite immediate reaction, a feeling of fear, of aversion, and an involuntary recoil. I am thrown into a state of automatically assumed expectancy. Likewise, when one says, 'this is chalk,' the meaning consists in a series of expectations more or less explicit, which are reducible to the general form. Given certain conditions A, then B will follow. In a scientific concept a great many such judgments may be implied, they obviously need not all be present in consciousness when we use the term.

The theory of Professor von Aster bears in many interesting respects upon the theory of knowledge, the nature of truth, the foundations of science. Viewing science as a closed deductive structure, the highest last principles on which the entire system hangs are upon his inspection found to be definitions of the objects of which science treats. They need, therefore, no special proof. The three primary laws of thought are likewise definitions, conveying what is really meant by the terms 'true' and 'false.' There are also a priori synthetic judgments, some of which become the foundations of mathematics. Such judgments as $2 + 2 = 4$ are universally valid, from the fact that they can always be verified by visual imagery without going back to sense-data. This test shows whether the statement holds for any and all cases of remembered or imagined objects of the kind concerned; moreover, we assure ourselves in this way that we are unable to conceive any case in which the statement could be contradicted. Such a priori truths are not all mathematical; for example, orange is more similar to red and to yellow than it is to green. Such judgments are not empirical, but the relations thus discovered conform to what we are accustomed to define as real. The test of truth here adopted is a modification of the 'correspondence theory,' but the reader will probably feel that judgments, as thus explained, seem self-evident rather in the sense that they are evident to the self than that they carry their evidence in themselves.

The 'objective reality of relations,' which to the reviewer still seems to figure in the theory rather as an assertion than as a verified statement, leads to a rather narrow conception of the limits of pure mathematics. Let us consider von Aster's theory of the logical origin of geometry. He regards geometrical points and lines as species of limits or boundaries that can be actually visualized. A circle in geometrical space is consequently "anschaulich vorstellbar," that is, we can construct it in visual imagination "in so far as it is to be sought among such figures as we are able no longer to differentiate perceptually" (p. 233). Besides, we are provided with certain a priori synthetic truths concerning geometrical space and figures. A limited number of these are necessary to geometry in that it would not be a possible science without them. These are the axioms.

Objection can be raised when it is discovered what are the axioms thus provided. One is, there can be but one straight between two points. This is controverted by the Riemannian geometry. Another is, there is motion without deformation. This is contrary to the geometry of Lobachevski. These two geometries are secondary growths on the ground that their problems can be visualized only by translating them into Euclidean space. The contention is correct but as non-Euclidean geometries they certainly belong to geometry, even though they do not fit into the narrow frame thus provided for geometry as one of the sciences.

The same narrowness of foundation is observed when psychology is discussed. We have found human knowledge to be of a very definite character, being based on our habit of anticipating future possible experiences. This ideal accords very well with the aim of physical science, but psychology is hopelessly far from being at present an exact science like physics. Moreover, it is hazardous to prophesy what its destiny may be. It seems that for psychology and her kindred to perfect themselves they must seek laws of action and systematize human nature. To the reviewer this proposal appears to involve a violent perversion of what is already known about personality as an object of science. Especially hazardous is the advice since it is suggested that in order to frame laws of the mental life we should make free use of the concept 'sub-consciousness,' of which almost any random assertion may pass muster if it seems to aid progress.

Considering the abstruseness of the problems, their treatment by Professor von Aster is remarkably clear and effective. The reviewer nevertheless bespeaks some indulgence, if he has misinterpreted the author's meaning in any essential point, since the nature of the problem makes its discussion complex and difficult, and it is scarcely possible to give an adequate account of so intricate an argument within so narrow a compass.

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